Name of the course	**Crystallization**
Number of instruction hours	20
Outline of course/module content	The concept of solution stability, supersaturation and solubility. The prinicples of calculations of composition of electrolyte solutions - ionic equilibria, nonideality corrections. Precipitation diagrams, solubility and precipitation boundary, induction period. Experimental techniques used for precipitaion (spontaneous precipitation, seeding, constant composition). Basic processes included in precipitation (nucleation, crystal growth, dissolution, ageing, transformation, secondary nucleation) and their interactions. Kinetics and mechanisms of nucleation, formation of precursor phases. Crystal growth and dissolution - clasification (bulk diffusion/convection, adsorption, surface diffusion, integration and/or surface nucletion controlled). The principles of analysis of kinetics. Relations between physical chemical properties of precipitate (mineralogical composition, crystal size distribution, morphology) and growth rate determining mechanisms. Influence of impurities Effect of process parameters on the granulometric characteristics of crystals. Properties of crystals: structure, shape (habit), crystal size and crystal size distribution. Performing of the crystallization processes from: solutions, melt and vapor, and crystallization with additives. Crystallization processes classifications: according to the attainment of the supersaturation level (by cooling crystallization, evaporative crystallization; vacuum crystallization); according to the mode of operation (batch and continues crystallization). The effect of the crystal granulometric characteristics on followed manufacturing processes. Crystallizers: operating mode and selection. Modeling equipment requests.
Description of instruction methods	lecture, consultation
Description of course/module requirements	seminar, exam